

Jessie Brouwers, Veerle De Bosscher, Hebe Schailleé, Jasper Truyens, Popi Sotiriadou.

J Med Sci Tennis 2010;15(3): 21-25

“The Relationship Between Performances at U-14 International Youth Tournaments and Later Success in Tennis”

Abstract

International athletes appear to be getting younger and national tennis federations and coaches often identify talent based on performances at youth tournaments. Sponsors prefer to invest in young players who have good on-court results. However, not much is known about the accuracy of youth performances as an indicator for later success. This article explores the relationship between performances at international under-14 (U14) tournaments and later success in tennis. Performance progress of players was examined using a bottom up and top down analysis based on the results of 3,521 players at U14 youth tournaments and the professional ranking of 727 male players and 779 female players. The results revealed that even though good performances at young ages increase the chance to becoming an elite athlete, they are not necessary to achieve later success. Performances at U14 youth tournaments seemed to have only a relative importance in the determination of later success.

Keywords: talent identification, U14 youth tournaments.

Introduction

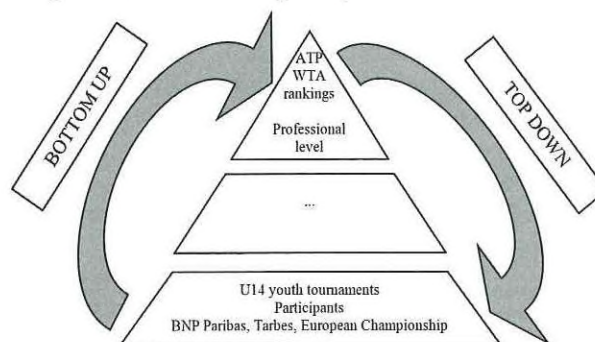
The process of talent identification and development is challenging and often discussed by national sport federations, coaches, managers and researchers.^(1,2,3,4) Hecimovic⁽⁵⁾ and Wiersma⁽⁶⁾ found that international athletes are becoming younger and early specialisation in sports such as tennis becomes more important. Therefore, the early identification of talented tennis players is an important consideration for tennis coaches, researchers and federations.⁽⁴⁾ Grosser and Schönborn⁽⁷⁾ found that the present practice for talent identification in the sport of tennis is to look at tournament results and ranking lists of children under the motto: *‘the successful ones and those with the highest ranking must have the most talent.’* Unierzyski⁽⁴⁾ found that due to a lack of scientific information, talent identification is often based on tournament results achieved at a young age. In earlier work from Unierzyski⁽⁸⁾, it was indicated that it is a big mistake to identify talent based only on results achieved in under-10 and under-12 tournaments. However, MacCurdy⁽⁹⁾ argued that a player must achieve at least a minimal level of results in each stage of development to be considered a good prospect. Not much is known about the extent to which performances at young ages are a good indicator for later success. This study examined the relationship between performances at U14

youth tournaments and success at professional level in tennis and identified to what extent performances at these youth tournaments are important to reach later success.

Materials and Methods.

The purpose of this research was to investigate how youth tournament players performed at the professional level (bottom up approach) and how professional top 20 players performed in the selected U14 youth tournaments (top down approach). Both approaches are illustrated in Figure 1.

Figure 1.
Top down and bottom up analysis



Sampling.

This study used retrospective data from past performances of male and female tennis players. The two types of data collected were: (a) U14 tournament results;

and, (b) professional rankings from the Women's Tennis Association (WTA) and, the Association of Tennis Professionals (ATP). Table 1 is an overview of the sample and different analysis that were used.

Table 1
Overview of different analyses and samples.

Type of analysis	Set of data	Performance indicators	Time Period*	Sample size	Age of sample	Relationship analysed
Bottom up	U14 Youth tournament players	Tournament results from 3 international U14 youth tournaments	1990 - 2006 (male), 1990 - 2005 (female)	1,897 males 1,624 females	10-14 year	Performance of youth tournament players at professional level 1. Number of youth tournament players that reached ATP/WTA ranking top 200 2. Relationship between performance at youth tournaments and ATP/WTA ranking
Top down	Professional top 20 players	ATP/WTA Rankings	1992 - 2008 (male), 1992 - 2007 (female)	68 males 60 females	14 - Open	Performance of ATP/WTA top 20 players in youth tournaments

*At the moment data collection ATP rankings (male) were available till 2008 and WTA rankings (female) were available till 2007.

- Youth tournaments

The tournament results from three international U14 youth tournaments from 1990 to 2006 for 1,897 male players, and from 1990 to 2005 for 1,624 female players, were entered into the database. Les Petits As (Tarbes), BNP Paribas (France Open) and the European championship were selected as most important U14 tournaments according to high performance directors and other representatives from the Flemish federation. Tennis Europe grants index points to performances of players based on performances at U14 tournaments and the importance of the tournament. The number of tournaments a player participated was taken into account in order to eliminate the advantage of players who participated in more tournaments. The performance of a player is the total sum of the index points earned at each tournament divided by the number of tournaments the player has participated in.

- Professional rankings

The final ATP rankings from 1992 to 2008 for 727

male top 200 players (aged 14 and above) and the final WTA rankings from 1992 to 2007 for 779 female top 200 players (aged 14 and above) were entered in the database.

Analysis.

Descriptive statistics were used to analyse the data. For the statistical tests the statistical package for social sciences, 'SPSS 16.0 for Windows', was used. To examine the correlation between performances at youth tournaments and at professional level, the Spearman rank correlation coefficient was used as the data, index points at youth tournaments and rankings, are data at ordinal level. To check if the differences between groups were significant, the Mann-Whitney U test was used for data of ordinal level.

Results.

Many different analyses were conducted of the collected data. However, the following section focuses shortly on the most important findings of the study. The results

section is structured as follows: first, the correlation between performances at U14 youth tournaments and ATP/WTA rankings is analysed. Second, we examine performances of youth tournament players at the professional level. Third, we examine performances of ATP/WTA top 20 players in youth tournaments.

Correlation

The correlation between the highest index points players gained at a youth tournament and their best ATP/WTA ranking was significant (alpha level 0.01) for both male and female players. However, both correlations were low ($r_{s\text{ male}} = -.208$ and $r_{s\text{ female}} = -.296$). This means that there is great uncertainty about the relationship between performances at youth tournaments and the ranking at professional level and that the relationship is not certain enough to predict later success based on performances at youth tournaments.

Bottom up analysis

The youngest male tournament player was 12 years old and the youngest female player was 10 years old. The results of the bottom up analysis revealed that 6.2% (n =

117) male and 9.1% (n = 147) female youth tournament players reached the ATP/WTA top 200.

In more into depth analysis, players who performed well in the youth tournaments were distinguished from players who performed poor. First, ATP/WTA performances of winners, finalists and semi-finalists of the youth tournaments were compared. The results showed that players with better youth tournament results were more likely to reach the ATP/WTA top 200, 100 or 20 and chances are higher, especially for the winners. Table 2 shows that 36.4% of the male youth tournament winners reached the top 100 at a later age, while this was only 19.0% for finalists and 8.4% for semi-finalists. Another finding from table 2 is that these figures are higher for women than men, 47.5% of the female youth tournament winners reached the top 100, while this was only 29.3% for finalists and 17.9% for semi-finalists. Interestingly, also around 20% of the winners (both male and female) reached the ATP/WTA top 20. On the other side, we have to be aware that 56.8% male winners and 40% female winners did not reach the top 200 at professional level.

Table 2.

Percentage of winners, finalists, semi-finalist of youth tournaments that reached ATP/WTA top 200, 100 or 20.

	MALE				FEMALE			
	Winners	Finalists	Semi-finalists	All youth tournament players	Winners	Finalists	Semi-finalists	All youth tournament players
	(n = 44)	(n = 42)	(n = 83)	(n = 1,897)	(n = 40)	(n = 41)	(n = 78)	(n = 1,624)
	%	%	%	%%	%	%	%	%
Senior top 200	43.2	28.6	13.3	6.2	60.0	39.0	29.5	9.2
Senior top 100	36.4	19.0	8.4	4.1	47.5	29.3	17.9	5.6
Senior top 20	18.2	9.5	4.8	1.3	22.5	9.8	1.3	1.1

The Mann-Whitney U test revealed that winners and finalists reached a significant better ranking compared to other youth tournament players ($p < .05$). This means that when a player reaches the final of one of the selected youth tournaments, the player will be more likely to reach a better ranking compared to other tournament players. Second, ATP/WTA rankings of 1329 male and 1113 female early defeated tournament players were analysed to examine if these players can also be successful at professional level. Early defeated tournament players were players who earned only 20 index points or less on average at the different youth tournaments. A small percentage of early defeated

tournament players (3.2% male and 4.1% female players) reached a top 200 place in the ATP/WTA rankings. Only four (0.3%) of the male early defeated tournament players reached a top 20 ranking. None of the female early defeated tournament players was able to reach the top 20.

Top down analysis

In examining how ATP/WTA top 20 players since the year 2000 performed at youth tournaments when they were young, we found that 42.6% male and 28.3% female professional top 20 players participated in one of the selected U14 tournaments (Table 3).

Table 3.
Performance of ATP/WTA top 20 players in youth tournaments

Performance	MALE		FEMALE	
	N	%	N	%
Number of ATP/WTA top 20 players since 2000	68	100%	60	100%
Participation tournament (Tarbes, European Championship, BNP Paribas)	29	42.6%	17	28.3%
"Early defeated tournament players"	15	22.1%	5	8.3%
1/2 and 1/4 finalists	4	5.9%	4	6.7%
Winners & finalists	10	14.7%	8	13.3%

Most of the male players who participated in a youth tournament lost early in the tournament (22.1%). 14.7% of the male top 20 players reached a final in one of the selected youth tournaments. Only 8.3% of the female top 20 players lost early in the tournament and 13.3% female top 20 players reached a final in one of the selected youth tournaments when young.

Discussion.

The results of this study revealed weak correlations (0.208 for male and 0.296 for female players) between performances at U14 youth tournaments and success at the professional level. The male correlation was lower than the correlation found by Unierzyski⁽¹⁰⁾ who showed a correlation of 0.47 between the U14 Tennis Europe ranking and the ATP professional ranking. The low correlations found in this research can be attributed to the fact that it is based on performances at only three youth tournaments. Although these tournaments were chosen in consultation with high performance directors and other representatives of the Flemish Tennis Federation, other important tournaments (e.g., Tim Essonne, Tennis Europe Winter Cups by Head, European Summer Cups) may be considered for inclusion in future research.

Notwithstanding the low correlations, players with better performances at youth tournaments appear to have a greater chance to be successful at the professional level. However, success at the highest level can never be guaranteed based on results at U14 youth tournaments. Even the winners of the selected youth tournaments have less than 50% chance to reach the ATP/WTA top 100. The reason for this could be that at young ages experience, technical skills and biological maturity are the most important factors influencing win/loss on youth tournaments.⁽⁹⁾ MacCurdy⁽⁹⁾ suggested not to make final talent identification decisions before the age of 16 because the body of players undergoes big physical changes between the age of 14 and 16 which may explain why some successful youth tournament players are not necessary successful at the professional level. The top down analysis showed that only 42.6% male and 28.3%

female top 20 players participated in one of the selected tournaments when young. This could imply that there are other pathways to success. For example, the US collegiate system might be effective in fostering player talent⁽¹¹⁾ or other regional, national and international tournaments may be regarded as important by other nations.

Conclusions.

This study showed that results at youth tournaments could act as an indicator of future success, however, to a certain extent only. Coaches, parents and performance directors need to understand and appreciate the relative importance of performances at young ages and have to take this into account when identifying talent. They should be aware that performances at youth tournaments are not the sole talent identification factor or predictor of later success. When analysing youth performances, perhaps other factors such as physical skills, psychological preparation and social support should be taken into account.⁽¹²⁾ The prediction accuracy of talent identification appears to be inversely related to the length of time over which the prediction is intended to span.⁽¹³⁾ Therefore, predictions will be more accurate when made closer to the time of peak performance. Maquirrain and Cerúndolo⁽¹⁴⁾ found that the age of peak performance of top-ten professional players was 24.1 (male players) and 21.5 years (female players) and that top-ten male and female players were ranked higher at the age of 18, 21 and 24 compared to other successful players. Further research with bottom and top down analysis is recommended for older age categories (under 16 and under 18) in order to increase the accuracy of predictions for later success.

Acknowledgement

We acknowledge the Ministry of Culture, Youth, Sport and Media from the Flemish Government for their support in this study. This study was part of a larger project, including other sports (judo, athletics and gymnastics).

References

1. Abott A, Collins D. Eliminating the dichotomy between theory and practice in talent identification and development: considering the role of psychology. *J Sports Sci.* 2004;22(5):395-408.
2. Schönborn R. Talent Problems. Tennis Europe Coaches Symposium Marbella. 1984.
3. Stojan S. Talent search and talent selection. Tennis Europe Coaches Symposium Marbella. 1984.
4. Unierzyski P. Foundations for tennis talent identification and player development tennis programmes. *ITF Coaching and Sport Science Review.* 2006;14(39):3-5.
5. Hecimovich M. Sport specialization in youth: a literature review. *JACA.* 2004;41(4):32-42.
6. Wiersma LD. Risks and benefits of youth sport specialization: perspectives and recommendations. *Pediatr Exerc Sci.* 2000;12(1):13-22.
7. Grosser M, Schönborn R. Competitive tennis for young players. Oxford: Meyer & Meyer; 2002.
8. Unierzyski P. Factors affecting performance. *ITF Coaching and Sport Science Review.* 1994;3(8):8.
9. MacCurdy D. Talent identification around the world and recommendations for the Chinese Tennis Association. 2006 [accessed 28/4/2010]; available from: http://www.itftennis.com/shared/medialibrary/pdf/original/IO_18455_original.PDF.
10. Unierzyski P. Why some juniors succeeded and some other did not. Retrospective analysis of players born in 1981-1983. European Coaches Symposium; 2002; Vale do Lobo, Portugal.
11. Reid M, Crespo M, Santilli L, Miley D, Dimmock J. The importance of the International Tennis Federation's junior boys' circuit in the development of professional tennis players. *J Sports Sci* 2007;25(6):667-72.
12. Lidor R, Cote J, Hackfort D. ISSP Position stand: To test or not to test? The use of physical skill tests in talent detection and in early sport development. *Int J Sport Exercise Psychol* 2009;9:131-46.
13. Vaeyens R, Gullich A, Warr C, Philippaerts R. Talent identification and promotion programmes of Olympic athletes. *J Sports Sci.* 2009;27(13):1367-80.
14. Maquirriain J, Cerúndolo A. Age trends in professional tennis players. *Med Sci Sports Exerc* 2009;41(5):85.



Jessie Brouwers (BEL, PhD Candidate, Bond University, Australia)

Jessie Brouwers graduated in 2009 at the Free University of Brussels, Belgium with a Masters in Physical Education and Movement Sciences (specialising in sports management) with the highest distinction. In her master's thesis she examined the talent identification process based on youth tournaments in tennis. In January 2010 she started a PhD at Bond University, Queensland, Australia about the elite sport policy and international tennis success in Belgium and Australia (2010-2012). Additionally to her academic background, Jessie works as a tennis coach.



Veerle De Bosscher (BEL, Professor, Vrije Universiteit Brussel, Belgium)

Veerle De Bosscher works as a Professor at the department of Sports Policy and Management (faculty of Physical Education) in the Vrije Universiteit Brussel (VUB), Belgium. She graduated in 1994 in Physical Education and earned a Masters degree (GGS) in sports management in Brussels (VUB, 1995) and also in training and coaching in Leuven (KUL, 1995). In 2007 she obtained her doctorate cum laude on the topic "Sports Policy Factors Leading to International Sporting Success", on which a book was published (the global sporting arms race). She is involved in courses on sports policies and sports management. Research interests are in different areas of sport management related to sport- and elite sport systems, international comparisons, measuring competitiveness youth and sport development, and quality management in sport. She is an advisor for elite sport policies in Flanders (Belgium).



Hebe Schailleé (BEL, PhD Candidate, Vrije Universiteit Brussel, Belgium)

Hebe Schailleé is working as a PhD-student at the department of Sport Policy and -Management at the Vrije Universiteit Brussel. She graduated in 2007 at the Vrije Universiteit Brussel (VUB) with a Master's degree in Physical Education (option Sports Management) with distinction. In 2008 she earned a teacher's certificate with high distinction and simultaneously, she has been working as a researcher at the same university at the Department of Sports Policy and Management.

Jasper Truyens (BEL, PhD Candidate, Vrije Universiteit Brussel, Belgium)

Jasper Truyens is working as a PhD-student at the department of Sport Policy and -Management at the Vrije Universiteit Brussel. He graduated as Master in Sociology in 2006 and successfully attained the postgraduate diploma in sport management (2007). His doctoral thesis (2008-2011) is about the measurement of competitiveness in elite sport policies at a sport specific level. As a junior researcher he is contributing to the development of new perspectives within the SPLISS (Sports Policy factors Leading to International Sporting Success) consortium group on the measurement and comparison of elite development systems.



Popi Sotiriadou (GRE, PhD, Bond University Australia)

Dr Sotiriadou started her career as an elite athlete in sailing and built on that experience with her PhD in sport development processes and practice in Australia in 2005. Dr Sotiriadou work on sport development (from mass participation to elite levels of participation) has gained such acceptance that she has been invited to consult to the Australian Sports Commission and Cycling Australia. Currently employed at Bond University as an Assistant Professor of Sport Management, Dr Sotiriadou is coordinating the undergraduate sport management program.